

## CLAIMS

1. A vehicle drive system, comprising:
  - a rotating electric machine (1, 1A) structured to have a forward direction and a reverse direction as a rotation direction of an output shaft (44), a maximum output in said reverse direction being smaller than the maximum output in said forward direction;
  - 5 a battery (38) discharging during power running of said rotating electric machine (1, 1A) and being charged during regenerative operation of said rotating electric machine (1, 1A), voltage between terminals of said battery (38) being increased while said battery (38) is charged, and being decreased while said battery (38) discharges; and
  - 10 a rotary shaft (42) rotating in a direction allowing a vehicle to move forward in accordance with rotation of said output shaft (44) in the forward direction.
2. The vehicle drive system according to claim 1, wherein said rotating electric machine (1, 1A) includes
  - 15 a stator (2, 30), and
  - a rotor (3, 33) having a shape that allows the maximum output in the rotation in said reverse direction to be smaller than the maximum output in the rotation in said forward direction.
- 20 3. The vehicle drive system according to claim 2, wherein
  - said rotor (33) has a plurality of salient pole portions (35), and
  - each of said plurality of salient pole portions (35) has a shape tilted with respect to an axis passing through a rotation center and orthogonal to said output shaft.
- 25 4. The vehicle drive system according to claim 2, wherein said rotor (3) is provided with a flux barrier (22, 24, 26, 28) bilaterally asymmetric with respect to an axis passing through a rotation center and orthogonal to said output shaft.

5. The vehicle drive system according to claim 1, further comprising:  
an inverter (36) disposed on a path for receiving and distributing current  
between said battery (38) and said rotating electric machine (1, 1A), and  
5 a control device (40) obtaining rotation information from said rotating electric  
machine (1, 1A) to control said inverter (36), wherein  
said control device (40) controls said inverter (36) such that torque in said  
forward direction is generated in said rotor (3, 33) in accordance with an acceleration  
instruction to allow said rotating electric machine (1, 1A) to perform power running,  
10 and that torque in said reverse direction is generated in said rotor (3, 33) in accordance  
with a deceleration instruction to allow said rotating electric machine (1, 1A) to perform  
regenerative operation.
6. A vehicle, comprising:  
15 a vehicle drive system, wherein said vehicle drive system includes  
a rotating electric machine (1, 1A) structured to have a forward direction  
and a reverse direction as a rotation direction of an output shaft (44), a maximum output  
in said reverse direction being smaller than the maximum output in said forward  
direction,  
20 a battery (38) discharging during power running of said rotating electric  
machine (1, 1A) and being charged during regenerative operation of said rotating  
electric machine, voltage between terminals of said battery (38) being increased while  
said battery (38) is charged, and being decreased while said battery (38) discharges, and  
a rotary shaft (42) rotating in a direction allowing a vehicle to move  
25 forward in accordance with rotation of said output shaft (44) in the forward direction;  
and  
a wheel (32) connected to said rotary shaft (42).

7. The vehicle according to claim 6, wherein said rotating electric machine (1, 1A) includes

a stator (2, 30) and

5 said rotor (3, 33) having a shape that allows the maximum output in the rotation in  
said reverse direction to be smaller than the maximum output in the rotation in said  
forward direction.

8. The vehicle according to claim 7, wherein

said rotor (33) has a plurality of salient pole portions (35), and

10 each of said plurality of salient pole portions (35) has a shape tilted with respect  
to an axis passing through a rotation center and orthogonal to said output shaft.

9. The vehicle according to claim 7, wherein said rotor (3) is provided with a  
flux barrier (22, 24, 26, 28) bilaterally asymmetric with respect to an axis passing  
15 through a rotation center and orthogonal to said output shaft.

10. The vehicle according to claim 6, wherein

said vehicle drive system further includes

20 an inverter (36) disposed on a path for receiving and distributing current  
between said battery (38) and said rotating electric machine (1), and  
a control device (40) obtaining rotation information from said rotating electric  
machine (1, 1A) to control said inverter (36), and  
25 said control device (40) controls said inverter (36) such that torque in said  
forward direction is generated in said rotor (3, 33) in accordance with an acceleration  
instruction to allow said rotating electric machine (1, 1A) to perform power running,  
and that torque in said reverse direction is generated in said rotor (3, 33) in accordance  
with a deceleration instruction to allow said rotating electric machine (1, 1A) to perform  
regenerative operation.